

REMARKS

Claims 1 and 16 have been amended above. Claims 2, 3, 7 and 12 have been canceled. Claims 1, 4-6, 8-11 and 13-16 are, therefore, pending in the application. Claims 1 and 4-16 have been rejected.

The Examiner's comments together with the cited references have been carefully studied. Favorable reconsideration in view of the foregoing amendments and following remarks is respectfully requested.

Claims 1-4, 6-9, and 11-16 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Kitamura et al. It is the conclusion of the Examiner that "The ink receptive layers of the reference will hold both dye and fluid carrier of an ink, both layers include inorganic particles and each may include antioxidant particles as recited by the instant claims. Therefore, the lower ink receptive layer of the reference may include what applicant refers to as 'stabilizer particles.' Therefore, it would have been obvious to include the antioxidant (stabilizer) particles in both layers because it is suggested by the reference. Additionally, there is nothing in the claims to indicate that the base layer absorbs the fluid carrier and the ink-receiving layer holds the dye, each to the exclusion of the other. As stated above, both ink receptive layers of the reference will perform both of these functions." The Examiner additionally concludes, "...one of ordinary skill in the art would have expected less fading to occur when antioxidant is present in both the surface layer and the base layer..." and "one of ordinary skill in the art would have found it obvious to include antioxidant and/or UV absorbers in both coating layers to prevent image fade."

The rejection is traversed. The claims have been amended to clarify that image-receiving layer has a thickness of 5 to 20 μm and has the function of holding the ink near the layer's outer surface and acting as a sump for absorption of ink solvent. Support for the thickness limitation is to be found on page 5, lines 24-30. Support for the function of the image-receiving layer is to be found on page 16, lines 10 to 13. The respective function of the image-receiving layer and the base layer is further described on page 5, lines 18-21 where it is stated that "The pores formed between the particles [in the image-receiving layer] must be sufficiently large and interconnected so that

the printing ink [ink solvent] passes quickly through the layer and away from the outer surface to give the impression of fast drying.” Thus although the image-receiving layer quickly absorbs the fluid carrier which is then absorbed by the base layer to dry the outer surface, the ink that forms the image remains in the image-receiving layer. The different compositions and thicknesses disclosed in the specification, respectively, for these two layers are responsible for performing the recited function in the claims. Furthermore, the skilled artisan recognizes the term “image-receiving layer” to be the location of the image and hence the corresponding ink. It is respectfully submitted that Kitamura et al. does not disclose the use of stabilizer particles in the base layer in addition to the image-receiving layer nor the unexpectedly improved results obtained thereby.

Applicants have amended the specification to replace “P-2” with “SP-2,” an obvious typographic error. Although there is no dye-fixative in the form of polymer particles, the skilled artisan will appreciate that inorganic particles such as fumed alumina have a positive surface charge that can act as a mordant for inks.

Independent claim 16 has been further amended to recite that the image-receiving layer and the base layer consists essentially of said stabilizer particles for reducing colorant fade. Support for the latter phrase is to be found on page 17, line 3, which clearly excludes the use of UV absorbers.

In contrast, Kitamura et al. require an ultraviolet ray absorber but the antioxidant is optional. Comparing, in the Kitamura et al. patent, Table 1 (page 16) showing results for image-receiving layers with a UV absorber but no antioxidant (Examples I-1 to I-11) to Table 2 (page 22) showing results for image-receiving layers with both a UV absorber and an antioxidant, it is apparent that the fading rates are marginally or somewhat better with the addition of the antioxidant. Most of the improvement is due to the UV absorber. In contrast, in the present invention, by having the antioxidant in both the image-receiving layer and the base layer, there is a relatively dramatic improvement in fading rates and density loss without any UV absorber. See the present specification for improvements of more than 50% in both Table 1 for ambient light fade, and improvements of around 50% for density loss in

both Table 2 and 3. The use in the present invention of stabilizer particles (essentially without UV absorber) in both a base layer and the image-receiving layer, would appear to provide dye fade and dye density improvement that, based on the results in Kitamura et al., is comparable to the use of both stabilizer and UV absorber only in an image receiving layer. Avoiding the amounts of UV absorber used in Kitamura et al. provides a significant advantage, since UV absorbers are somewhat colored species that can degrade and cause discoloration or yellowing.

In view thereof, it follows that the subject matter of the claims would not have been obvious of Kitamura et al. at the time the invention was made.

Claims 1, 16 and 10 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Kitamura et al. and further in view of Chu et al. Claims 1, 16, and 5 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Kitamura et al. and further in view of Becker.

These rejections are traversed for the reasons stated above with respect to claim 1 and 16. The addition of the calendering is a secondary feature of the invention and does not relate to the main purpose of the invention which is to prevent light fade or provide increased image density. Similarly, the addition of the core-shell particles is a secondary feature of the invention and does not relate to the main purpose of the invention which is to prevent light fade or provide increased image density.

Applicants have reviewed the prior art made of record and believe that singly or in any suitable combination, they do not render Applicants' claimed invention unpatentable.

It is believed that the foregoing is a complete response to the Office Action and that the claims are in condition for allowance. Favorable reconsideration and early passage to issue is therefore earnestly solicited.

Respectfully submitted,



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